



ENHANCES

ENHANCing Coastal Ecosystem Services

Our Funders:



GCBC



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The ENHANCES Project delivers new environmental, climatic, and ecological data as well as physical and social science tools. These will facilitate decision making and action for mitigating coastal erosion and flood risk.

With over 85% of its population in low-lying areas, Suriname is highly vulnerable to sea-level rise and storms. However, the best strategy for long term coastal protection is unclear.

Hard fortifications like seawalls and dykes are costly and can trap floodwaters if overtopped, but provide reliable protection from major storms and can be built quickly.

Existing mangrove forests, offer protection from coastal storms and erosion, and also provide multiple benefits to local communities, including acting as a buffer for incoming storms, and fortifying the coastline by trapping sediments and reducing erosion. They also support fishing, agriculture, forestry and tourism, but are declining globally due to environmental, climatic and human pressures. Mangrove forest cover is being reduced by human and environmental pressures, reducing the capacity for these forests to protect coastlines.



The 2023 FAO report states that more than 20% of global mangroves were lost over the past 40 years.

Natural or rehabilitated mangrove forests can be coupled with hard defences or soft-shoreline infrastructure like permeable barriers and sediment trapping mechanisms. The benefits are that mangroves can also protect coastal infrastructure, which otherwise would need costly maintenance. However, knowledge is needed to ensure these natural and human-made systems work together: natural mangrove systems require specific freshwater and other inputs to maintain healthy growth, so coastal barriers normally act to conflict with these, unless freshwater outlets are considered within the barrier. Mangrove rehabilitation is cost-effective either alone or in combination with other mechanisms but can be difficult to implement in active eroding environments and require time for the mangrove forests to mature.

A seawall protecting a coastal city



Photo: David Stanly, Flickr 2014

Sediment retention structures

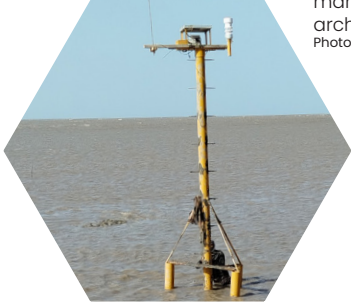


Photo: ENHANCES, 2024

Our Approach



Top: Drones will be used to map mangrove forest architecture.
Photo: ENHANCES



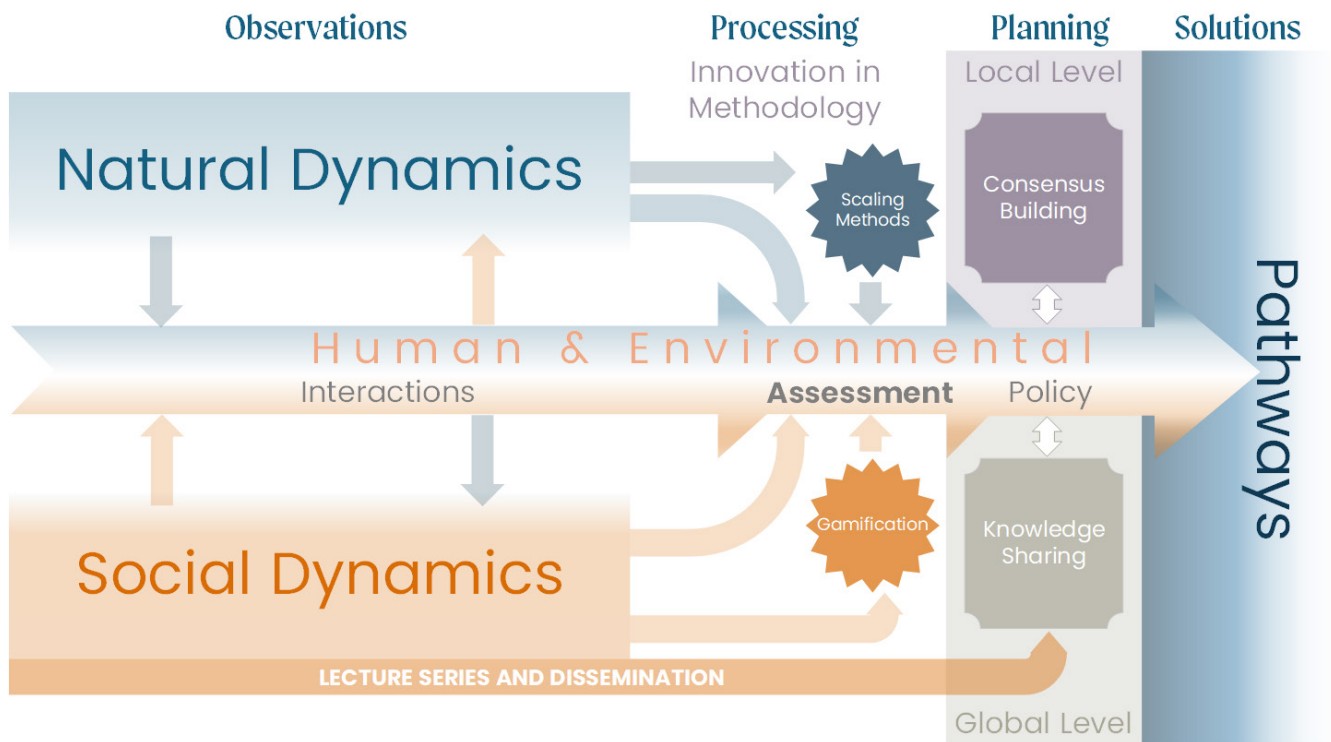
Bottom: Monitoring stations will collect water quality and weather data.
Photo: ENHANCES

Scientific evidence is needed to assist decision-making. We will collect a range of data from selected study sites along the coast, including ocean and coastal dynamics (e.g. wave heights, frequencies and direction), environmental data (e.g. weather, water temperature, turbidity, aerial photographs) and ecology data (e.g. mangrove forest structure and composition, biodiversity). We will use ground observations, plus drone and satellite imagery to integrate information across spatial scales and monitor across time.

We will then share this data to build a common understanding of coastal processes to inform action and facilitate cooperation and decision-making. We will use a new technique using a board-game (through gamification – the use of gaming in a context beyond entertainment) to engage all people and start in depth discussions.

ENHANCES will explore the interface between the human and natural systems as shown in the illustration below. We will progress from field observations to integrated analyses to support planning and related pathways to solutions.

An overview of ENHANCES. Assessing the human/environmental interface is critical in finding pathways to solutions.



ENHANCES relies on the input of community members like you to work towards solutions.

Please contact us to actively participate in this project.

For more information about ENHANCES, visit www.ENHANCESProject.org



Project Partners

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